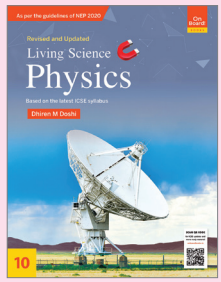
ICSE Living Science PHYSICS

Class 10



Multiple-Choice Questions

Chapter 6: SPECTRUM

1. When a white light ray falls on a prism, the ray at its first surface suffers
   (a) no reflection.
   (b) only dispersion.
   (c) only deviation.
   (d) both deviation and dispersion.
   Ans: (d)

2. Dispersion of light by a glass prism takes place because
   (a) the light of different colours have different intensities.
   (b) the light of different colours have different speeds in a medium.
   (c) the light of different colours have different frequencies.
   (d) the light of different colours have different energies.
   Ans: (b)

3. The figures represent three cases of a ray passing through a prism of angle A. The case corresponding to minimum deviation is

   (i) (ii) (iii)

   (a) (i). (b) (ii). (c) (iii). (d) None of these.
   Ans: (c)

4. In the spectrum of white light by a prism, the colour at the extreme end opposite to the base of prism is
   (a) violet. (b) yellow. (c) red. (d) blue.
   Ans: (c)

5. The four colours of the spectrum of white light which have wavelength longer than blue light are
   (a) green, yellow, orange and red.
   (b) violet, yellow, orange and red.
   (c) yellow, green, orange and red.
   (d) blue, indigo, orange and red.
   Ans: (a)

6. Which of the following does not affect the angle of deviation in a prism?

(a) Angle of prism
(b) Refractive index of prism material
(c) Frequency of the light
(d) Wavelength of the light

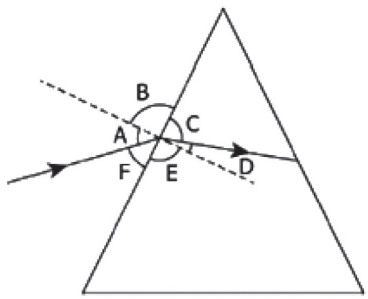
Ans: (c)

7. The phenomenon of splitting of white light into its constituent colours on passing through a glass prism is called

(a) scattering of light.
(b) dispersion of light.
(c) refraction of light.
(d) deviation of light.

Ans: (b)

8. The image shows a light ray incident on a glass prism.



The various angles are labelled in the image. Which angles show the angle of incidence and angle of refraction, respectively?

(a) A and D
(b) B and E
(c) C and F
(d) D and F

Ans: (a)

9. A spectrum in which various bands of colours have sharp well–defined boundaries and do not merge with each other is called

(a) pure spectrum.
(b) impure spectrum.
(c) real spectrum.
(d) virtual spectrum.

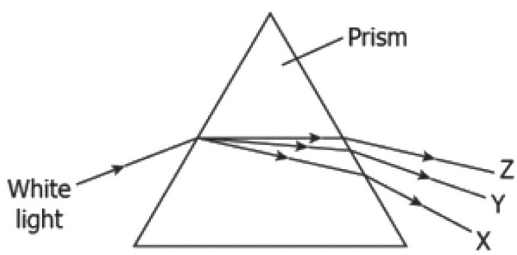
Ans: (a)

10. What is used to measure the wavelength of electromagnetic radiation?

(a) Dioptre
(b) Angstrom
(c) Square metre
(d) Light year

Ans: (b)

11. The image shows the dispersion of the white light in the prism.



What will be the colours of the X, Y and Z?

(a) X: red; Y: green; Z: violet
(b) X: violet; Y: green; Z: red
(c) X: green; Y: violet; Z: red
(d) X: red; Y: violet; Z: green

Ans: (b)

12. The most energetic electromagnetic radiations are

(a) microwaves.
(b) ultraviolet waves.
(c) X-rays.
(d) gamma rays.

Ans: (d)

13. The source of ultraviolet light is

(a) electric bulb. (b) red hot iron ball. (c) sodium vapour lamp. (d) carbon arc-lamp.

Ans: (d)

14. The colour of the clear sky looks blue due to the phenomenon of _____ in the earth's atmosphere.

(a) dispersion of light (b) refraction of light (c) scattering of light (d) deviation of light

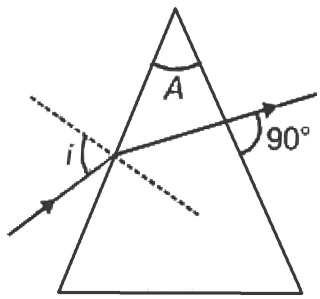
Ans: (c)

15. The electromagnetic radiations whose wavelength is longer than that of the visible red light are called

(a) ultraviolet waves. (b) infrared radiations. (c) X-rays. (d) gamma rays.

Ans: (b)

16. A ray is incident at a small angle i on one surface of a prism of small angle A and emerges normally from the opposite surface of the prism as shown in the picture.



If the refractive index of the material of the prism is n, then the angle of incidence i is equal to

(a) $A/2n$ (b) A/n (c) nA (d) $nA/2$

Ans: (c)

17. In white light of the sun, maximum scattering by the air molecules present in the earth's atmosphere is for

(a) red colour. (b) yellow colour. (c) green colour. (d) blue colour.

Ans: (d)

18. Microwaves are the electromagnetic waves of wavelength in the range of

(a) 1×10^{-3} m to 3×10^{-1} m (b) 6×10^{-13} m to 3×10^{-1} m

(c) 1×10^{-10} m to 3×10^{-8} m (d) 3×10^{-3} m to 1×10^{-1} m

Ans: (a)

19. Which of the following statements about the wavelength of light is incorrect?

(a) Light of short wavelength is scattered more than the light of long wavelength.

(b) Blue light has a wavelength about 1.8 times greater than red light.

(c) Smaller particles scatter light of shorter wavelength.

(d) Larger particles scatter light of longer wavelengths.

Ans: (b)

20. We should not see the sun directly for a longer time because of the _____ radiations coming from the sun which may cause permanent blindness.

(a) X-rays (b) Gamma (c) Ultraviolet (d) Microwave

Ans: (c)

21. The electromagnetic waves which can be detected by Geiger-Muller tube are

(a) Radio. **(b)** Gamma.

(c) Ultraviolet. **(d)** Infrared.

Ans: **(b)**

22. Which electromagnetic waves are used for heating, and in night-vision devices?

(a) X-rays **(b)** Gamma rays

(c) Ultraviolet radiations **(d)** Infrared radiations

Ans: **(d)**

23. The wavelength of red in white light is in the range of

(a) 6300 Å to 7600 Å **(b)** 4000 Å to 4460 Å

(c) 4460 Å to 4640 Å **(d)** 5780 Å to 5850 Å

Ans: **(a)**

24. The orderly classification of electromagnetic waves according to their wavelength or frequency is called the

(a) visible spectrum. **(b)** electromagnetic spectrum.

(c) invisible spectrum. **(d)** infrared spectrum.

Ans: **(b)**